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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,279	12/12/2003	Taiji Torigoe	246501US0CONT	1923

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EXAMINER	
EDGAR, RICHARD A	

ART UNIT	PAPER NUMBER
3745	

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/733,279	TORIGOE ET AL.	
	Examiner	Art Unit	
	Richard Edgar	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/03 & 3/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

The drawings were received on 19 April 2004. These drawings are accepted.

Specification

The disclosure is objected to because of the following informalities:

In the *Brief Summary of the Invention*, Applicants have virtually copied the text of the claims, including the claim dependency. Applicants are encouraged to amend the *Brief Summary of the Invention* to eliminate the claim references, since claims may be amended and renumbered, rendering the *Brief Summary of the Invention* inaccurate.

On page 11, line 11, "FIG. 1F" should be --FIG. 1E--.

On page 11, line 14, "FIG. 1E" should be --FIG. 1F--.

On page 11, line 15, "(x40)" should be --(x100)--.

On page 14, line 25, "Embodiments" should be --embodiments--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Each of the claims requires a method wherein a layer is removed. Applicants have not disclosed how to remove a plated layer containing at least Cr, Al and Y. Furthermore, with respect to claims 9 and 10, Applicants have not disclosed how to remove a plated layer containing at least Cr, Al and Y while leaving either the first plating layer or the first and second plating layer, especially since a heating process is required to form an alloy layer.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 4, 8, 9 and 10, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 4, as far as it is definite, is rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 5,076,897 (Wride et al. hereinafter).

Wride et al. disclose an erodable abrasion layer for a turbine blade 80, wherein hard particles 83 are partially exposed, and an alloy layer 81,82,84 , in which alloy particles containing at least Cr, Al and Y are dispersed and diffused (col. 6, lines 54-62).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, as far as they are definite, and claims 8-10, as far as they are enabled and definite, are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,074,970 (Routsis et al.) in view of United States Patent No. 5,076,897 (Wride et al. hereinafter).

Routsis et al. show a method of forming an abrasion-resistant coating on a tip portion of a rotor blade arranged in proximity to the inner wall of the turbine case (col. 1, lines 15-43). An alloy blade is first electroplated with a pure nickel layer (col. 2, lines 51-52), then a second layer is electroplated onto the first nickel layer (col. 2, lines 57-58), then a third nickel layer is electroplated together with a deposition of hard particles (col. 2, line 65-col. 3, line 11), and then heat treating is carried out (col. 6, lines 29-31). The method disclosed by Routsis et al. teaches the application of an abrasive layer to a blade, both newly manufactured and refurbished.

Routsis et al., however, do not recite the nickel layers having at least Cr, Al and Y therein, coating the outer nickel layer with an aluminum layer, and the specific heat treatment performed at a temperature of 500 °C to 1100 °C for ½ to 3 hours in an inert gas atmosphere.

Wride et al. show an abrasive tip for a turbine blade, wherein nickel layers comprising Cr, Al and Y are applied to the tip (col. 6, lines 54-53). The outer nickel layer is treated with an aluminum layer (col. 6, lines 51-53). A heat treatment is carried out between ½ and 1 hour at a temperature between 1080 °C and 1100 °C in an argon atmosphere. The specific elements and heat treatments are used by Wride et al. for the purpose of anchoring the hard particles into the blade tip.

Since Routsis et al. teach an abrasive blade tip for a rotor blade comprising hard particles lodged in nickel layers, and Wride et al. teach specific nickel layers used to anchor the hard particles therein, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the second and third

layers of Routsis et al. to comprise at least Cr, Al and Y, have the outer layer aluminized and heat treat the blade between ½ and 1 hour at a temperature between 1080 °C and 1100 °C in an argon atmosphere, as taught by Wride et al. for the purpose of anchoring the hard particles into the blade tip.

Claim 5, as far as it is definite, is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,076,897 (Wride et al. hereinafter) as applied to claim 4 above, and further in view of United States Patent No. 5,952,110 (Schell et al. hereinafter).

Wride et al. show a turbine blade with an alloy containing at least Cr, Al and Y, wherein hard particles are anchored therein. Furthermore, Wride et al. teach an aluminizing layer applied to the blade (col. 6, lines 51-53). Wride et al. however, do not specify that the hard particles are partially exposed through the aluminized layer.

Schell et al. show hard particles 16 anchored in an MCrAl layer, wherein a outer surface layer 14 is applied so that at least some of the hard particles16 project above the outer surface 14 for the purpose of providing the cutting action into the shroud (col. 5, lines 16-18).

Since Wride et al. teach an outer layer overtop of the alloy layer, and Schell et al. also teach the outer layer, but specifies that the hard particles should also penetrate the outer layer, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the aluminizing layer of Wride et al. so that at least some of the hard particles penetrate the aluminizing layer, as taught by Schell et

al., for the purpose of allowing the hard particles to provide the cutting action into the shroud.

Claim 6, as far as it is definite, is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,076,897 (Wride et al. hereinafter) as applied to claim 4 above, and further in view of United States Patent No. 5,620,307 (Mannava et al. hereinafter).

Wride et al. show a blade for a turbine with an abrasive tip arranged with a shroud, but do not show a stationary vane near the casing and between the blade and an adjacent rotating blade.

Mannava et al. show in Figure 1 that turbines have more than one rotor stage 9 in the turbine section, and the rotor stages are separated by vanes 9A for the purpose of guiding the fluid flow onto the rotating blades.

Since Wride et al. is a blade for a turbine engine, and Mannava et al. show that turbine engines with rotor blades have more than one rotor stage separated by vanes, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the blade of Wride et al. to be located in a turbine engine having another blade and a vane located therein between for the purpose of guiding the fluid flow onto the turbine rotor blade.

Claim 7, as far as it is definite, is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 5,076,897 (Wride et al. hereinafter) in view

of United States Patent No. 5,952,110 (Schell et al. hereinafter) as applied to claim 5 above, and further in view of United States Patent No. 5,620,307 (Mannava et al. hereinafter).

Wride et al. modified by Schell et al. show a blade for a turbine with an abrasive tip arranged with a shroud, but do not show a stationary vane near the casing and between the blade and an adjacent rotating blade.

Mannava et al. show in Figure 1 that turbines have more than one rotor stage 9 in the turbine section, and the rotor stages are separated by vanes 9A for the purpose of guiding the fluid flow onto the rotating blades.

Since Wride et al. modified by Schell et al. is a blade for a turbine engine, and Mannava et al. show that turbine engines with rotor blades have more than one rotor stage separated by vanes, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to further modify the blade of Wride et al. to be located in a turbine engine having another blade and a vane located therein between for the purpose of guiding the fluid flow onto the turbine rotor blade.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Edgar whose telephone number is (571) 272-4816. The examiner can normally be reached on Monday thru Friday, 8:00 am until 4:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard Edgar
Examiner
Art Unit 3745

RE

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12/10/09